

Setting the standard

Wheat Allergen components*

Use this guide to interpret ImmunoCAP™ Allergen component test results and unlock a broader understanding of a patient's allergic sensitization, allowing for a more comprehensive management plan.¹⁻¹⁵

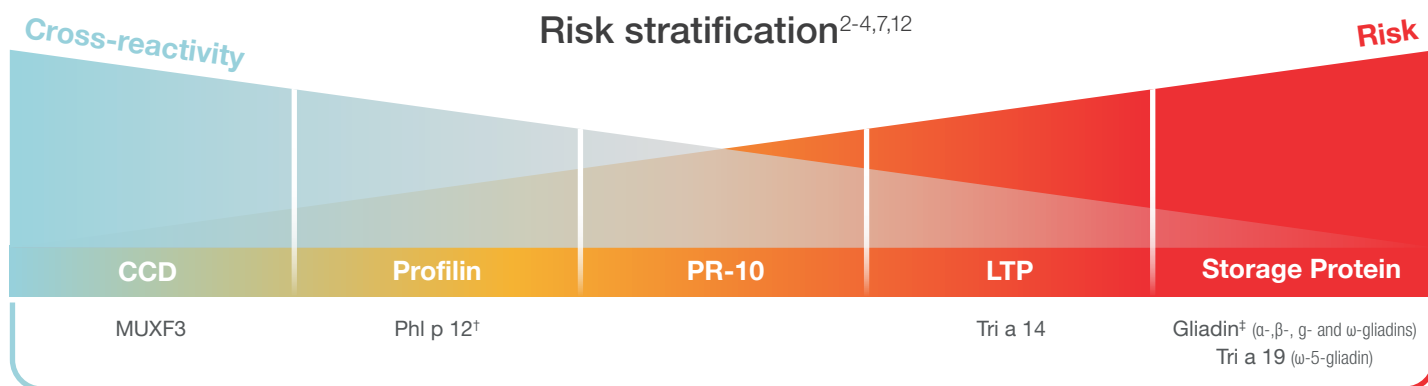
Testing with wheat allergen components can help to:¹⁻¹⁵

-  Assess risk for systemic allergic reactions
-  Support cross-reactivity interpretation
-  Optimize diagnosis and management

Up to
65%

of grass-allergic patients will also be sensitized to wheat but might not have a true clinical wheat allergy.^{2,3,14}

Because wheat is part of the grass family, grass-allergic patients will often be sensitized to wheat due to cross-reactivity.^{2-4,14}



[†]Surrogate markers for profilin Phl p 12, Bet v 2, Pru p 4.

[‡]Gliadin is purified from a wheat extract and consists of 4 native, highly purified (99%) gliadin components: α-, β-, g- and ω-gliadins (including ω-5 gliadin).

Characteristics of individual proteins^{3,4,8,12}

CCD

Does not usually provoke clinical reactions

Highly cross-reactive (pollen, plant food, venoms)

Profilin

Sensitization is usually asymptomatic

Abundant in nature

Cross-reactive with pollen

PR-10

Labile to heat and digestion

Mainly local reactions

Cross-reactive with birch pollen

LTP

Stable to heat and digestion

Local and systemic reactions

Cross-reactive with plant foods and pollens

Storage Protein

Stable to heat and digestion

Associated with systemic reactions

Indicates primary sensitization

Diagnostic considerations

Wheat f4	Tri a 14 f433	Gliadin f98	Tri a 19 f416	
+/-	+/-	+	-	<p>If clinical symptoms are present with exposure to wheat, high probability of clinical wheat allergy and risk for systemic reactions.^{12,15} Consider the following:</p> <ul style="list-style-type: none"> • Immediate type wheat allergy¹¹⁻¹³ • Wheat-dependent exercise induced anaphylaxis (WDEIA)⁵ • Bakers allergy (asthma) with Tri a 14-positive patients^{2,4,12} • Patient likely to react to oral food challenge (OFC) • Prescribing epinephrine auto-injector • Informing family, colleagues, and teachers of the allergy and have a plan
+/-	+/-	+/-	+	<p>If clinical symptoms are present with exposure to wheat, high probability of clinical wheat allergy and risk for systemic reactions.¹³ Consider the following:</p> <ul style="list-style-type: none"> • Immediate type wheat allergy¹¹⁻¹³ • Higher risk of WDEIA and/or other co-factors that may increase severity of reaction (e.g. exercise, alcohol, ect.)^{11,12} • Bakers allergy (asthma) with Tri a 14-positive patients^{2,4,11,12} • Less likely to outgrow/develop tolerance⁵ • Patient likely to react to OFC • Prescribing epinephrine auto-injector • Informing family, colleagues, and teachers of the allergy and have a plan
+	+	-	-	<p>If clinical symptoms are present with exposure to wheat, high probability of clinical wheat allergy. Consider the following:</p> <ul style="list-style-type: none"> • Systemic and local symptoms such as oral allergy syndrome (OAS) are possible^{4,13} • Patient may be sensitized to other LTPs contained in other plant foods/pollens due to cross-reactions which may cause systemic symptoms^{7,8} • Bakers allergy (asthma)^{2,12} • Immediate type wheat allergy and/or WDEIA¹¹⁻¹³ • Patient likely to react to OFC • Prescribing epinephrine auto-injector • Inform family, colleagues, and teachers of the allergy and have a plan
+	-	-	-	<p>If there are no symptoms with wheat exposure, or if symptoms are localized to only the oral cavity, primary wheat allergy and severe reactions are less likely. Consider the following:</p> <ul style="list-style-type: none"> • Further investigation to identify primary allergen by investigating what other allergens patient is exposed to^{2-4,6} • Testing for CCD, Profilin (Phl p 12), and regional grasses^{2-4,7,12-14} • OFC with a specialist may be recommended

Note: As in all diagnostic testing, any diagnosis or treatment plan must be made by the clinician based on test results, individual patient history, the clinician's knowledge of the patient, as well as their clinical judgment. Patients can be sensitized to more than one allergen component.¹

Whole allergens consist of several allergen components. A positive whole allergen sensitization with negative allergen component sensitization may mean a patient is sensitized to a component that is not yet available for testing. Consider a patient's clinical history and if an OFC with a specialist may be warranted.

*Official product names of allergens mentioned within this document: ImmunoCAP Allergen f4, Wheat; ImmunoCAP Allergen f98, Gliadin; ImmunoCAP Allergen f433, Allergen component rTri a 14 LTP, Wheat; ImmunoCAP Allergen f416, Allergen component rTri a 19 Omega-5 Gliadin, Wheat

References

1. Kleine-Tebbe J, Jappe U. Molecular allergy diagnostic tests: development and relevance in clinical practice. *Allergologie* select. 2017;1 (2):169-189. 2. Ricci G, Andreozzi L, Cipriani F, Giannetti A, Gallucci M, Caffarelli C. Wheat allergy in children: a comprehensive update. *Medicina (Kaunas)*. 2019;55 (7). 3. Nilsson N, Nilsson C, Ekoff H, Wieser-Pahr S, Borres M, Valenta R, Hedlin G, Sjölander S. Grass-Allergic Children Frequently Show Asymptomatic Low-Level IgE Co-Sensitization and Cross-Reactivity to Wheat. *International Archives of Allergy and Immunology*. 2018;177(2):135-144. 4. EAACI, et al. Molecular allergy user's guide. *Pediatr Allergy Immunol*. 2016 May;27 Suppl 23:1-250. doi: 10.1111/pai.12563. PMID: 27288833. (213-223 p) Available from: http://www.eaaci.org/documents/Molecular_Allergyology-web.pdf 5. Hofmann SC, Fischer J, Eriksson C, Bengtsson Gref O, Biedermann T, Jakob T. IgE detection to α/β/γ-gliadin and its clinical relevance in wheat-dependent exercise-induced anaphylaxis. *Allergy*. 2012;67(11):1457-60. 6. Nilsson N, Sjölander S, Baar A, Berthold M, Pahr S, Vrtala S, Valenta R, Morita E, Hedlin G, Borres M, Nilsson C. Wheat allergy in children evaluated with challenge and IgE antibodies to wheat components. *Pediatric Allergy and Immunology*. 2015;26(2):119-125. 7. Bradshaw N. A Clinical Reference Guide to Molecular Allergy. *Go Molecular! Molecular Allergy—The Basics*. 2014. 8. Katelaris CH. Food allergy and oral allergy or pollen-food syndrome. *Curr Opin Allergy Clin Immunol* 2010. 10:246–251. 9. Nucera E, et al. Hypersensitivity to major panallergens in a population of 120 patients. *Postepy Dermatol Alergol*. 2015 Aug; 32(4): 255–261. 10. Mittag D, Akkerdaas J, Ballmer-Weber BK, et al. Ara h 8, a Bet v 1-homologous allergen from peanut, is a major allergen in patients with combined birch pollen and peanut allergy. *J Allergy Clin Immunol*. 2004;114(6):1410-1417 11. Sastre J. Molecular diagnosis in allergy. *Clin Exp Allergy* 2010. 40:1442–1460. 12. Pastorello E, Toscano A, Scibilla G, Stafylaraki C, Rossi C, Borgonovo L, Nichelatti M, Farioli L. Clinical Features of Wheat Allergy Are Significantly Different between Tri a 14 Sensitized Patients and Tri a 19 Sensitized Ones. *International Archives of Allergy and Immunology*. 2021;183(6):591-599. 13. Constantin C, Quirce S, Poorafshar M, Touraev A, Niggemann B, Mari A, Ebner C, Akerstrom H, Hebel-Bors E, Nystrand M, Valenta R. Micro-arrayed wheat seed and grass pollen allergens for component-resolved diagnosis. *Allergy* 2009; 64: 1030–1037. 14. Hofmann S, Fischer J, Eriksson C, Bengtsson Gref O, Biedermann T, Jakob T. IgE detection to α/β/γ-gliadin and its clinical relevance in wheat-dependent exercise-induced anaphylaxis. *Allergy*. 2012;67(11):1457-1460.

Learn more at thermofisher.com/allergy